

Claims

1. Process for reducing the acrylamide content of heat-treated foods compared with corresponding conventional heat-treated foods comprising:
 - (a) selecting plant material which, compared with corresponding conventional plant material, has a reduced content of soluble sugars;
 - (b) processing the said plant material to give a food; and
 - (c) heat-treating the food produced in process step b).
2. Process according to Claim 1, in which the said acrylamide content is reduced by at least 15% compared with the acrylamide content of corresponding conventional heat-treated foods.
3. Process according to Claim 1, in which the said acrylamide content is reduced by at least 30% compared with the acrylamide content of corresponding conventional heat-treated foods.
4. Process according to one of Claims 1 to 3, in which the said heat treatment is carried out at temperatures of at least 100°C.
5. Process according to one of Claims 1 to 4, in which the said heat-treated foods are selected from the group consisting of potato crisps, (potato) chips, parfried potato chips, mashed potato, biscuits, crackers, crisp bread, breakfast cereals, maize crisps (tacos), popcorn, bread crisps, wafers, salt sticks, coffee, bread, rolls, cakes, rice crisps, pizza and toast, in addition tortillas, croquettes, wedges, potato sticks, twisters, bread coatings for meat,

fish and vegetables, bread coatings for nuts, tortilla chips, bread or cereal formulations, pre-cooked meals baby food.

- 5 6. Process according to one of Claim 1 to 5, in which the plant material used is characterized in that it is genetically modified, the genetic modification leading to a reduction in the content of soluble sugars, compared with corresponding conventional plant material from wild type plants.
- 10 7. Process according to Claim 6, in which the said genetic modification leads to a reduction in the activity of one or more endogenous R1 proteins occurring in the plant cell compared with corresponding plant cells of wild type plants which have not been genetically modified.
- 15 8. Process according to one of Claims 6 or 7, in which the said genetic modification is the introduction of one or more foreign nucleic acid molecules, the presence and/or expression of which leads to the reduction in the activity of one or more endogenous R1 proteins occurring in the plant cell compared with corresponding plant cells of wild type plants which have not been genetically modified.
- 20 9. Process according to Claim 8, in which the said foreign nucleic acid molecules are selected from the group consisting of
- 25 (a) DNA molecules which code for at least one antisense RNA causing a reduction in expression of endogenous genes which code for R1 proteins;
- (b) DNA molecules which, via a cosuppression effect, lead to reduction of the expression of endogenous genes coding for R1 proteins;
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- (c) DNA molecules which code for at least one ribozyme which cleaves in a specific manner transcripts of endogenous genes coding for R1 proteins;
- (d) nucleic acid molecules which are introduced by means of in vivo mutagenesis and lead to a mutation or insertion of a heterologous sequence in genes coding for endogenous R1 proteins, the mutation or insertion causing a reduction in the expression of the said genes or the synthesis of inactive R1 proteins;
- (e) DNA molecules which simultaneously code for at least one antisense RNA and at least one sense RNA, the said antisense RNA and the said sense RNA forming a double-stranded RNA molecule which causes a reduction in the expression of endogenous genes coding for R1 proteins;
- (f) DNA molecules which contain transposons, the integration of the transposon sequences leading to a mutation or an insertion in endogenous genes coding for R1 proteins which causes a reduction in the expression of the said genes or the synthesis of inactive R1 proteins; and
- (g) T-DNA molecules which, via insertion in endogenous genes coding for R1 protein cause a reduction in the expression of genes coding for R1 protein or the synthesis of inactive R1 proteins.
10. Process according to one of Claims 1 to 4 or 6 to 9, in which the said plant material originates from potato plants.
11. Process according to Claim 10, in which the said heat-treated foods are selected from the group consisting of potato chips, potato crisps, parfried potato chips and mashed potato.

12. The use of plant material according to one of Claims 1, 6, 7, 8, 9 or
10 for producing heat-treated foods which, compared with
corresponding conventional heat-treated foods, have a reduced
acrylamide content.

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13. The use according to Claim 12, in which the said acrylamide
content is reduced by least 15% compared with the acrylamide
content of corresponding conventional heat-treated foods.

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14. The use according to Claims 12 or 13, in which the said heat-
treated foods are selected from the group consisting of potato
crisps, (potato) chips, parfried potato chips, mashed potato,
biscuits, crackers, crisp bread, breakfast cereals, maize crisps
(tacos), popcorn, bread crisps, wafers, salt sticks, coffee, bread,
rolls, cakes, rice crisps, pizza and toast, in addition tortillas,
croquettes, wedges, potato sticks, twisters, bread coatings for meat,
fish and vegetables, bread coatings for nuts, tortilla chips, bread or
cereal formulations, pre-cooked meals baby food.

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15. The use of plant material according to one of Claims 1, 6, 7, 8, 9 or
10 for reducing the acrylamide content of heat-treated foods.

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16. Process for identifying plant material which is suitable for producing
heat-treated foods having a reduced acrylamide content,
comprising:

- a) determining the content of soluble sugars and/or amino acids
of the plant material which is suitable for producing heat-
treated foods; and

- b) selecting such plant material according to process step a) which, compared with corresponding conventional plant material, has a reduced content of soluble sugars and/or amino acids.

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